

NOTE ICHTYOLOGIQUE

EYE LENS AS AN AGE INDICATOR IN *MYSTUS PELUSIUS* (BAGRIDAE). L.A.J. AL-HASSAN, N.K. AL-DAHAM and S.S. HASSAN, Departement of Fisheries and Marine Resources, College of Agriculture, University of Basrah, Basrah, IRAQ.

ABSTRACT. - The validity of using eye lens diameter as an age indicator in the fish, *Mystus pelusius* is tested. It was found that freshly dissected lenses are a very accurate age indicator for different age groups.

RÉSUMÉ. - La validité de l'utilisation du diamètre du cristallin comme indicateur de l'âge chez *Mystus pelusius* est testée. Il apparaît que les cristallins fraîchement disséqués sont de très bons indicateurs de l'âge dans différentes classes d'âge.

Key-words. - Bagridae, *Mystus pelusius*, Qarmat Ali River, Iraq, Age determination, Eye lens.

Eye lenses as an age indicator have been applied to a wide variety of animals since first proposed by Lord (1959). Friend (1967) used this technique for birds and animals other than fish. Teska and Pinder (1986) used eye lens weight to determine the effects of nutrition on age determination in vertebrates. Carlton and Jackson (1968) and Burkett and Jackson (1971) used eye weight lens as an age indicator in teleost fishes. Douglas (1987) used lens diameter for teleost fish specimens.

Many reliable methods for determining fish age involving otoliths, vertebrae, spines and scales are available. By applying previously developed procedures to fish lenses, this study should clarify whether the fish eye lenses may be used for age determination and whether it will be of particular value in those species which have scales that are difficult to interpret, small scales or no scales at all, such as in the case of *Mystus pelusius*. Specimens of *Mystus pelusius* were collected from the Qarmat Ali River, near Najibia power plant, north of Basrah city. A total of 250 fishes were taken from this area on three occasions. Eye lenses were dissected from fresh fishes. Eye lens diameter was measured to the nearest

0.1 mm using a hand micrometer. Vertebrae were chosen to verify the fish age. The first five vertebrae were removed and washed in tap water for 10 minutes, then in 0.5% hydrogen peroxide for 5 minutes and left to dry at room temperature. To clear the annuli on the surface of the centra, a 1:1 mixture of glycerine and alcohol was used. Growth rings were latter read according to the method described by El-Bolock (1972).

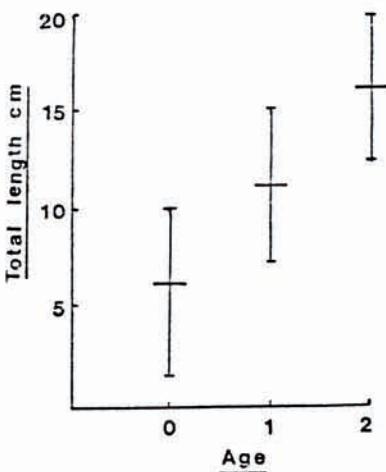


Fig. 1. - Total length versus age in *Mystus pelusius*. Vertical bars represent range and horizontal lines represent mean length.

Using vertebrae as a technique for age determination, age in this species ranged between 0 and 2 (number of individual = 300). Two year old fish did not provide an adequate sample. Young of the year was encountered in this study. Fish length in the different age groups overlapped and this could be considered as one of the reasons for using eye lens diameter as an age indicator (Fig. 1). As found by Douglas (1987), unlike the previous studies by Carlton and Jackson (1968), Crivelli (1980), Burkett and Jackson (1971) in different fish species, there was no overlap between the lens diameter in the three age groups (Fig. 2). This may be due to the fact that previous studies did not use fresh but fixed eyes for measurements; such

techniques may produce a degree of variability.

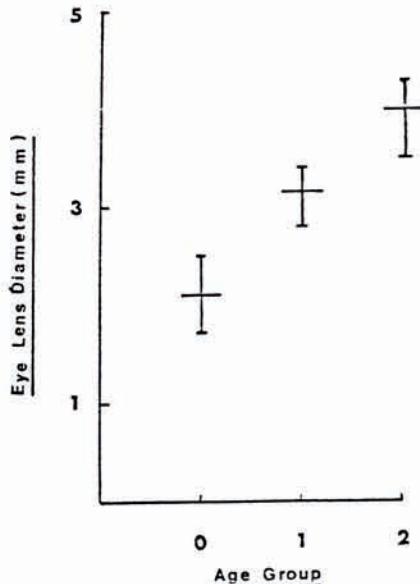


Fig. 2. - Lens diameter versus age in *Mystus pelusius*. Vertical bars represent total ranges and horizontal lines represent mean diameter.

Since all the published data on eye lenses in reference to ageing deal with birds and mammals, an assumption was made that the fish eye has a developmental pattern comparable with the eye of the other vertebrates (Carlton and Jackson, 1968). Thus eye lens diameter could well be used as an age indicator for *M. pelusius*. More age groups would prove if the eye lens technique

is a fast, reliable and objective method for determining fish age.

Acknowledgements. - Our sincere thanks are due to Mrs Saleh M. Al-Batran and Baha H. Jaber of the Najibia power plant, Basrah, for their help in obtaining fish samples.

REFERENCES

BURKETT D.D. & W.B. JACKSON, 1971. - The eye lens as an age indicator in freshwater drum. *Amer. Midl. Nat.*, 85: 222-225.

CARLTON W.G. & W.B. JACKSON, 1968. - The eye lens as an age indicator in carp. *Copeia*, 2968: 633-636.

CRIVELLI A., 1980. - The eye lens weight and age in the common carp *Cyprinus carpio* L. *J. Fish. Biol.*, 16: 569-473.

DOUGLAS R.H., 1987. - Ocular lens diameter as an indicator of age in brown trout, *Salmo trutta*. *J. Fish. Biol.*, 31: 835-836.

EL-BOLOCK A.R., 1972. - Use of vertebrae for determination of age and growth of nile catfish. *Bull. Inst. Ocean. Fish., Cairo.*, 2: 53-82.

FRIEND M., 1967. - Some observations regarding eye lens weight as a criterion of age in animals. *N.Y. Fish Game J.*, 14: 91-121.

LORD R.D., 1959. - The lens as an indicator of age in cottontail rabbits. *J. Wild. Manag.*, 23 (3): 358-360.

TESKA W.R. & T.E. PINDER, 1986. - Effects of nutrition on age determination using eye lens weights. *Growth*, 50: 362-370.

Reçu le 24.11.1989.

Accepté pour publication le 18.7.1990.